

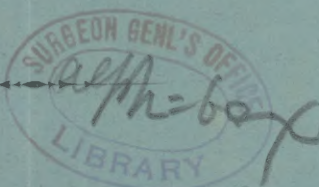
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ELECTRIZATION  
IN THE TREATMENT  
OF THE  
DISEASES OF THE ORGANS OF  
DIGESTION.

BY A. D. ROCKWELL, M. D.

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# ELECTRIZATION

IN THE TREATMENT OF THE

## Diseases of the Organs of Digestion.

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Among the diseases of the organs of digestion for which Electrization has been successfully employed are—*Dyspepsia, Gastralgia, Vomiting or Regurgitation, Jaundice, Constipation, Chronic Diarrhœa and Abdominal Neuralgia.*

These symptoms may be divided into two classes, those which depend on actual and recognizable disease of the organs, and those which are of a nervous character. Dyspepsia, gastralgia and vomiting may arise from weakness, congestion, inflammation, ulceration of the stomach; jaundice, from a variety of morbid states of the liver; constipation and chronic diarrhœa, and abdominal neuralgia, from disease of any or all of the organs of digestion, from the stomach to the intestines.

On the other hand, all these symptoms may exist independent of any recognizable disease of the respective organs. Such cases are to be classed among the nervous; they occur usually in nervous constitutions, and are symptomatic of disease of the nerve supply of the organs, of the spinal cord, of the sympathetic, or of all combined. These two general *types* of disease are sometimes associated.

ELECTRO-DIAGNOSIS.—Irritable conditions of the stomach, liver and intestines are sometimes revealed by their sensitiveness to the electric current.

Pains must be taken to distinguish the sensitiveness of the skin from that of the internal organs.

An anæsthetic condition of the liver is sometimes exceedingly marked. In two of our cases the whole power of our Faradic apparatus was not painfully felt, when localized through the liver, by large sponge electrodes. Irritability or ulceration of the large intestine is sometimes indicated in a very marked manner. For the diagnosis of diseases of these organs, the Faradic current, on account of its superior mechanical effects, is preferable to the galvanic.

GENERAL PRINCIPLES OF TREATMENT.—Electrical treatment is serviceable in the diseases of the organs of digestion in two ways: *First*, by the mechanical influence of the current on the tissues of the organs; *Secondly*, by its tonic influence on the spinal cord, sympathetic, and entire nervous system. In the

first type the former influence, in the second type the latter, is indicated. The tonic influence on the nervous system may be obtained by galvanization of the spine, brain, sympathetic and pneumogastric, and by general electrization. The mechanical influence on the tissues of the viscera may be obtained by general or localized Faradization.

A fundamental fact of great importance in the treatment of disorders of the digestive tract is this, that *for direct applications to the abdominal viscera, stomach, spleen, liver, intestines and uterus, the Faradic current is far preferable to the galvanic.* The reasons for this are two-fold.

1. The Faradic current acts more vigorously on the contractile fibre cells of the organs than the galvanic, and therefore produces more powerful *mechanical* effects, with passive exercise of all the deep tissues.

2. These parts are so situated anatomically, and are so liberally supplied with warm saline solutions, that they conduct the Faradic current under all conditions with perfect ease.

In the brain, and spinal cord and sympathetic, these conditions are reversed, and they are best treated by the galvanic current.

**LOCALIZED ELECTRIZATION OF THE ABDOMINAL VISCERA.**—The stomach and liver may be indirectly galvanized through the pneumogastric in the neck; the stomach, liver, spleen, kidneys and intestines may be



directly Faradized by applying large electrodes with very firm pressure over the back and abdomen, so as to pass the current directly through the organ that we wish to affect.

Except in cases of disease, these organs will bear with very strong currents without severe discomfort.

Either stable or labile applications may be used without regard to the direction of the current—from three to ten minutes, or even longer.

CASE 1.—DYSPEPSIA, ACCOMPANIED BY A VORACIOUS APPETITE, AND A CONSTANT BURNING IN THE STOMACH, DEPENDENT PROBABLY ON VASCULAR IRRITATION OF ITS MUCOUS MEMBRANE. Approximate recovery under treatment by general Faradization. The case of Mr. S., aged 31, presented symptoms of the old fashioned variety of indigestion—although this appearance did not indicate any special or annoying disease. A year previously he began to experience an uneasy feeling in the epigastric region after eating a hearty meal. This symptom gradually became more aggravated, until it was a source of serious annoyance. He had been advised to limit himself to a spare diet, and had attempted to regulate the quantity and quality of his food. In this he failed because of another symptom—viz: boulimia—in other words—a voracious appetite which refused to be controlled.

The enormous amount of food which he devoured



at every meal was but partially digested, and a considerable portion was occasionally vomited. When his meals were withheld a short time, he experienced an indescribable "sinking" at the stomach, impelling him to seize voraciously on articles of food. He complained especially of a constant sensation of heat, or a burning pain in the epigastrium, which was aggravated by the ingestion of food. We ascribed this symptom to an excessive vascular irritation of the mucous membrane of the stomach. An unequal circulation was manifest by cold extremities during the day and hot feet at night.

Derangement of the hepatic function was evident by the light clay-colored stools, while the urine was invariably almost colorless. The patient had been accustomed to the habitual use of alcoholic stimulants, but never to the point of intoxication. He had used strong coffee and tea to excess, but had for some months abstained from them altogether. The Faradic current was acutely felt over the stomach, but over the body generally he bore a current of more than ordinary intensity.

Three applications given in the course of a week appreciably lessened the irritation of the diseased organ. This effect was evinced by a decrease in the burning sensation, which was mentioned as a disagreeable and marked symptom. The vomiting was effectually controlled after two weeks of treat-

ment. Twenty applications administered during a period of two months resulted in an approximate cure. The voracious appetite was in a great measure subdued, and it was only after some indiscretion in diet, that any of the old local symptoms returned—sufficient to annoy the patient.

NERVOUS DYSPEPSIA (*Dyspepsie Asthenique*). Under this somewhat vague term are included a large and diverse variety of symptoms that depend on some irritation or morbid condition of the nerves that supply the organs of digestion. This morbid condition may probably be peripheral as well as central. Much more frequently than is supposed, the symptoms are due to spinal irritation, or to some diseased condition of the central nervous system. Among the leading and distinctive symptoms of nervous dyspepsia are distress and uneasiness in the stomach during or after eating, or when the stomach is empty; pain or spasm in the stomach from emotional causes; sick headache; constipation, or sometimes diarrhœa; deficiency of thirst, mental depression and general debility. Any one of these symptoms may arise from some inflammatory condition of the stomach, or other portions of the digestive tract; but all of them together, when found in a nervous constitution, point to a nervous origin. The important fact to be considered is that nervous dyspepsia, so far from being a merely local disease of the stomach, is simply one of many mani-

festations of the nervous diathesis, and is developed by whatever causes tend to debilitate the nervous system, and may variously alternate with almost any conceivable phase of nervous disease in any part of the body. Our object, here, however, is not to enter into any detailed description of the symptoms and cause of this so very familiar malady, but merely to indicate the *rationale* and the results of its treatment by electrization. Although but little known and scarcely recognized on the Continent of Europe, nervous dyspepsia is certainly very frequent in the United States, and is found in nearly every family.

**ELECTRO-DIAGNOSIS.**—In nervous dyspepsia there is frequently a peculiar and very unpleasant tenderness in the epigastric region, so that only a very mild current can be borne. In some cases a thrill, with a sinking sensation, is felt when the electrode, with a strong current, is passed down the spine; in other cases the application of a strong current at the cilio-spinal centre, or on the crown of the head, causes a feeling of nausea. The spinal irritation, on which nervous dyspepsia so often depends, is indicated by tenderness of the dorsal vertebræ on pressure or on application of the current.

**TREATMENT.**—We know of no treatment so sure to relieve the leading and concomitant phenomena of nervous dyspepsia as general Faradization. In connection with this we sometimes use galvanization



of the sympathetic, the pneumogastric, and spine. General electrization relieves nervous dyspepsia, not so much by virtue of its influence on the stomach—although it directly affects the stomach—as by its influence on the nervous condition of which the dyspepsia is a symptom.

PROGNOSIS.—The results of the treatment of nervous dyspepsia by *general Faradization alone are some of the most remarkable in therapeutics*. Cases of nervous dyspepsia, with their complications, are on the whole the best tests that can be offered for this method of treatment, not only are the purely dyspeptic symptoms relieved, but there is great improvement in sleep, in strength of muscle and brain, and in some cases very marked increase in weight.

CASE 2.—NERVOUS DYSPEPSIA, ASSOCIATED WITH PERIODICAL ATTACKS OF HEADACHE AND VOMITING. APPROXIMATE RECOVERY AND RAPID INCREASE IN WEIGHT FOLLOW GENERAL FARADIZATION. A young man consulted us in the fall of 1866 for a persistent form of nervous dyspepsia.

He was of a weak, nervous organization, and presented a remarkably anæmic and emaciated appearance. Every month or six weeks he was prostrated by a severe attack of headache and vomiting, from the effects of which he would not recover for several days. In administering a general application of the Faradic current, it was found that the liver was relatively the most sensi-

tive to its influence. So exhausting was the sensation produced by the electricity in this organ, that very decided symptoms of faintness followed. He soon rallied from its effects, and when he visited us two days subsequently, he expressed himself as having experienced very marked and grateful relief. At each sitting he was able to bear a more intense current over the digestive organs and body generally.

The beneficial effects of the applications were soon manifest by a more natural and lively appetite, relief of constipation, by greatly increased vigor of mind and body, and by the non-recurrence of his usual paroxysm of headache and vomiting. The first application was given October 24th, and the fifteenth and last in the early part of December. During the treatment the weight of this patient increased from 106 to 115 pounds.

NERVOUS CONSTIPATION, CHRONIC DIARRHŒA, AND JAUNDICE.—Constipation, associated with and constituting a part of nervous dyspepsia, is, like dyspepsia, disposed to yield rapidly, and often permanently, to general electrization, even when no special attention is given to the lower part of the back or the abdomen. This is the form of constipation that is most prevalent. Next to insomnia it is the symptom first to yield, even though there may be subsequent relapse. It not unfrequently happens that a strong application is followed, the next or

even the same day, by a freer alvine discharge than usual.

Constipation, much more frequently than is supposed, depends on an irritable, exhausted or congested condition of the spinal cord. That myelitis and the more serious lesions of the spinal cord are accompanied by a deranged condition of the bowels—either constipation or diarrhœa—is fully recognized; it is not, however, so well understood that spinal irritation, even in its milder degrees, may have constipation for one of its symptoms, and that this symptom will disappear with the removal of the cause, by treatment directed to the spine. For those cases that result from incurable disease of the brain or spinal cord, only temporary relief can be obtained. In such cases relapse usually occurs as soon as the treatment is discontinued.

Electrization may therefore be said to relieve constipation in several different ways:—

1st. By its general tonic effects on the system at large, on the same principle that it relieves nervous dyspepsia.

2d. By its tonic effects on the central nervous system, and especially on the spinal cord. On account of the fact that very many cases of constipation depend on a morbid condition of the cord, special attention should be given to the spine, whatever may be the method of electrization employed.



3d. The mechanical action of the Faradic current especially gives tone to the stomach, liver and intestines, markedly increases the hepatic and intestinal secretions, and aids the peristaltic action of the intestines. In regurgitation, the prognosis appears to be very encouraging. In jaundice, the results of our limited experience have been more favorable than the reverse. In chronic diarrhœa we have succeeded in three striking instances. The treatment of all these conditions is worthy of far more attention than it has thus far received from electro-therapeutists.

In the hands of the laity many of these symptoms have been treated by Faradization, with various results, for many years.

CASE 3.—HABITUAL CONSTIPATION FOR FIFTEEN YEARS. NO PERMANENT BENEFIT FROM MEDICATION. RAPID IMPROVEMENT UNDER GENERAL FARADIZATION. Mr. N., aged 30, a printer employed in the office of the *N. Y. Times*, was sent to us by Dr. St. John Roosa. For fifteen years he had suffered from constipation. So persistent were the symptoms, that neither well directed medication nor such hygienic measures as he could command were of any avail. The appetite was good, and the sleep moderately sound and refreshing. The patient complained of a sense of weight or oppression in the abdomen, of flatulence, and occasionally of a slight feeling of nausea. The evacua-

tions often came away in knotty lumps, after much straining and an unpleasant distension of the anus, and as a consequence of this torpor of the intestines, his health had become considerably impaired. He complained of a general feeling of malaise, and a disinclination to engage in any active effort. Above all, however, he suffered continually from most painful mental depression. The monotony and confinement of his occupation, together with the unnatural method of life, of working at night and sleeping during the day, served doubtless to aggravate the character of his disorder.

He received but three applications of the Faradic current, resulting in an extraordinary improvement in his general symptoms. After the first *seance* the bowels moved freely, and continued to do so every day while he visited us. He was completely relieved of his mental and physical depression, and in every respect was more vigorous than for many years before. The bowels continued regular for several months, when the old symptoms gradually returned. The patient again applied for treatment, and was relieved as effectually as before. We have heard nothing further concerning him, and are hopeful that he was more permanently benefited.

CASE 4.—LIFE-LONG CONSTIPATION, APPARENT RECOVERY UNDER GENERAL FARADIZATION.—Another case, sent by Dr. Roosa, presented symptoms in

many respects similar to the first. Even so long as the patient could remember, his bowels had uniformly acted in a sluggish manner. He seldom had a passage oftener than once in two days, and frequently a week would intervene from one evacuation to the next. As in the former case, the stools were hard and scanty, but the general health was not impaired to the same extent. The first application of the Faradic current was given Oct. 24, 1867, and resulted during the day in an evacuation every way more easy and natural than usual. After the fifth *séance*, his stools became quite liquid and frequent. This condition was, however, remedied by omitting the applications for a few days. He visited us subsequently but two or three times, when he discontinued treatment, having, as far as we could judge, experienced perfect relief.

In some cases of very obstinate constipation it is of advantage to localize the current by internal applications. This may be accomplished by means of a rectal electrode (Figs. 1 and 2). They may

Fig. 1.

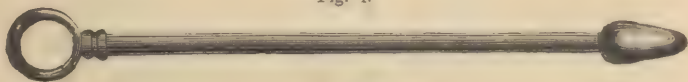


Fig. 2.



either be non-insulated, or insulated up to a point near the tip. A very powerful current may be borne in the rectum without discomfort.



**ILEUS (Invagination).—**Althaus reports two cases where powerful Faradization availed to cure constipation, when the ordinary remedies had been tried in vain. The negative pole was applied to the spine, and the positive passed over the abdomen in the region of the large intestine. In three minutes a very abundant evacuation appeared.

The second case was severe, but not as long standing as the other. The patient passed much blood at stool, and was fast becoming exhausted. The same application brought relief, though not so speedily as in the preceding case. Dr. Clement, of Frankfort, states that he has successfully treated invagination, by first administering one or two tablespoonsful of metallic mercury, which settled down to the seat of the invagination. The negative electrode was applied over the supposed seat of the disease, and the positive in the rectum. Voltaic alternatives were used.\*

**CASE 5.—CHRONIC DIARRHŒA OF SIX MONTHS STANDING, ASSOCIATED WITH GENERAL NEURALGIA. MARKED TENDERNESS OVER THE TRANSVERSE COLON. TREATED BY GENERAL FARADIZATION, WITH SPECIAL REFERENCE TO THE TENDER SPOT. RECOVERY IN THREE WEEKS.** A lady aged 35, a patient of Dr. H. H. Gregory, of this city, was directed to us because of a general neuralgia, from which at times she suffered excessively.

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\*Medical Electricity. Althaus, p. 603.

The Faradic current was applied over the whole body, and produced no discomfort, excepting when it was sent through a certain part of the intestinal tract. The tender spot was located in the right side directly over the transverse colon. Over no other portion of the abdomen was she at all sensitive to the electricity, but at this point a very moderate current produced a disagreeable, sharp burning pain, similar to that caused by making the application to a raw surface. Upon inquiry, the patient stated that for six months she had been annoyed by a diarrhoea, which persisted in spite of persevering and judicious medication. She was obliged to exercise the utmost caution in her diet, for the least indiscretion in eating was certain to aggravate her disorder. We now directed the applications more especially to this tender spot, and soon observed some amelioration of her diarrhoeal symptoms. The stools assumed a firmer consistency and a more healthy color, and in proportion as she improved in these respects, the tender spot became less sensitive to the influence of the electric current. Eight applications, extended over a period of three weeks, resulted in complete recovery.

REGURGITATION AND VOMITING.—For those cases of vomiting that are of an obviously nervous character, galvanization of the sympathetic and pneumogastric, or strong Faradization through the stomach, is

sometimes of important service. Successful results have been obtained by Peper and Bricheteau. The latter treated with success three cases of vomiting of pregnancy. His method of application was to place the electrodes on the epigastrium at the commencement, middle, and close of the meal.

**FLATULENCE.**—Flatulence is a symptom of disorder of the digestive organs, and frequently yields readily to electrical treatment. It demands the same treatment as dyspepsia and constipation.

Those very frequent cases that are dependent on spinal irritation and congestion, and on hysteria, need central galvanization or general Faradization; cases that depend on an attack of acute indigestion may be advantageously treated by internal applications, one pole being applied to the rectum by the rectal electrode, and the other to the spine or abdomen.

**SEA SICKNESS.**—In October, 1869, Mr. Le Coniat, a French surgeon, presented a method of treating sea-sickness before the N. Y. Medical Journal Association. Subsequently, a detailed account of the method was published by Dr. Dwinelle\* who had experienced the good effects of the treatment on his own person in a passage across the Atlantic. His method was to apply first a quantity of solution of atropine—one gr. to the ounce—to the epigastrium; then to apply a flat disk, connected with a Faradic

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\* New York Medical Journal, 1869, p. 390.



apparatus, over the pyloric extremity of the stomach, while a moistened sponge connected with the positive pole was passed over the surface, from the cardiac to the pyloric orifice. Vigorous contractions of the muscles appeared during the applications, which were followed by agreeable repose. Le Coniat claims to cure by this method 90 per cent. of his cases. The statements made by Coniat and Dwinelle lose much of their scientific as well as of their practical value from the fact that the atropine was combined with the Faradization. There is little doubt that the passage of the electric currents through the body facilitates the absorption of liquid, placed beneath the electrodes. Then again atropine is a remedy so powerful that  $\frac{1}{100}$  or even  $\frac{1}{200}$  of a grain is sufficient to powerfully affect the nervous system, when administered hypodermically.

Furthermore, it is a remedy for sea-sickness and sick headache, as has been shown by those who have employed hypodermic injections of this remedy combined with morphine. A dose containing  $\frac{1}{100}$  of a grain of atropine and  $\frac{1}{2}$  of a grain of morphine, is sufficient in certain cases to relieve the nausea and vomiting, and produce sleep—the same effects that are produced by the operation of Le Coniat. From all these considerations, taken in connection with the further consideration that sea-sickness is probably not a disease of the stomach alone, but of the central nervous system, of which the nausea

and vomiting are frequent but by no means necessary symptoms, we are strongly inclined to the belief that the result obtained by Le Coniat's procedure could have been obtained with much less difficulty by hypodermic injection of atropine. The true way to settle the question experimentally would be to treat a large number of patients by all three different methods—some by the procedure of Le Coniat, others by the same method without the atropine, and others by hypodermic injections of atropine. Electricity must be proved to have some very potent influence over sea-sickness in order to persuade patients and physicians to attempt its use on shipboard.





